

Abstract: Exploiting the substantive reciprocity of internode channel responses through dynamic, adaptive modification of receive and transmit weights, enables locally enabled global optimization of a multipoint, wireless electromagnetic communications network of communication nodes. Each diversity-channel-capable node uses computationally efficient exploitation of pilot tone data and diversity-adaptive signal processing of the weightings and the signal to further convey optimization and channel information which promote local and thereby network-global efficiency. The preferred embodiment performs complex digital signal manipulation that includes a linear combining and linear distribution of the transmit and receive weights, the generation of piloting signals containing origination and destination node information, as well as interference-avoiding pseudorandom delay timing, and both symbol and multitone encoding, to gain the benefit of substantive orthogonality at the physical level without requiring actual substantive orthogonality at the physical level.